**We Claim:**

1. A method of safely testing at least one lubrication property of a flammable corrosive volatile lubricating media under operating engine conditions, said method comprising:

providing a testing chamber comprising a workpiece;

sealing said testing chamber using one or more features of an actuator rod selected from the group consisting of a deviation from linearity through a longitudinal retaining bore and a clearance through the longitudinal retaining bore, the one or more features being effective to maintain the lubricating media at a pressure gradient sufficient to simulate said engine conditions between the testing chamber and the outside of the testing chamber while permitting the actuator rod to move freely through the longitudinal retaining bore;

subjecting said workpiece to said operating engine conditions comprising a selected pressure and a selected temperature;

imparting to said workpiece a contact force having a magnitude and for a number of cycles effective to simulate said operating engine conditions; and,

providing a venting mechanism effective to prevent pressure in said testing chamber from exceeding maximum safe pressure.

2. The method of claim 1 wherein said method meets the requirements of ASTM testing specification D 6079.

3. The method of claim 1 wherein the lubricating media is selected from the group consisting of dimethyl ether (DME), methyl tertiary-butyl ether (MTBE), ethyl tertiary-butyl ether (ETBE), ethanol, and methanol.

4. The method of claim 2 wherein the lubricating media is selected from the group consisting of dimethyl ether (DME), methyl tertiary-butyl ether (MTBE), ethyl tertiary-butyl ether (ETBE), ethanol, and methanol.

5. The method of claim 1 wherein said pressure gradient is at least about 100 psi or more.

6. The method of claim 1 wherein said pressure gradient is at least about 150 psi or more.

7. The method of claim 1 wherein said pressure gradient is at least about 160 psi or more.

8. The method of claim 4 wherein said pressure gradient is at least about 100 psi or more.

9. The method of claim 4 wherein said pressure gradient is at least about 150 psi or more.

10. The method of claim 4 wherein said pressure gradient is at least about 160 psi or more.

11. The method of claim 1 wherein said pressurizing comprises feeding inert gas under pressure to said testing chamber.

12. The method of claim 11 wherein said inert gas is selected from the group consisting of nitrogen, helium, argon, and combinations thereof.

13. The method of claim 11 wherein said gas is nitrogen.

14. The method of claim 1 wherein said selected temperature is from about 20°C to about 500 °C.

15. The method of claim 2 wherein said selected temperature is from about 20°C to about 500 °C.

16. The method of claim 3 wherein said selected temperature is from about 20°C to about 500 °C.

17. The method of claim 4 wherein said selected temperature is from about 20°C to about 500 °C.

18. The method of claim 1 wherein said deviation from linearity is about 100 microns or less.

19. The method of claim 2 wherein said deviation from linearity is about 100 microns or less.

20. The method of claim 3 wherein said deviation from linearity is about 100 microns or less.

21. The method of claim 4 wherein said deviation from linearity is about 100 microns or less.

22. The method of claim 18 wherein the sealing of said testing chamber is accomplished by providing a clearance through the longitudinal retaining bore of about 0.0005 inches.

23. The method of claim 19 wherein the sealing of said testing chamber is accomplished by providing a clearance through the longitudinal retaining bore of about 0.0005 inches.

24. The method of claim 20 wherein the sealing of said testing chamber is accomplished by providing a clearance through the longitudinal retaining bore of about 0.0005 inches.

25. The method of claim 21 wherein the sealing of said testing chamber is accomplished by providing a clearance through the longitudinal retaining bore of about 0.0005 inches.

26. The method of claim 1 wherein said providing a venting mechanism comprises providing a mechanical pop-off valve and a blow-out panel effective to prevent said pressure in said testing chamber from exceeding maximum safe pressure.

27. The method of claim 2 wherein said providing a venting mechanism comprises providing a mechanical pop-off valve and a blow-out panel effective to prevent said pressure in said testing chamber from exceeding maximum safe pressure.

28. The method of claim 3 wherein said providing a venting mechanism comprises providing a mechanical pop-off valve and a blow-out panel effective to prevent said pressure in said testing chamber from exceeding maximum safe pressure.

29. The method of claim 22 wherein said providing a venting mechanism comprises providing a mechanical pop-off valve and a blow-out panel effective to prevent said pressure in said testing chamber from exceeding maximum safe pressure.

30. The method of claim 23 wherein said providing a venting mechanism comprises providing a mechanical pop-off valve and a blow-out panel effective to prevent said pressure in said testing chamber from exceeding maximum safe pressure.

31. The method of claim 24 wherein said providing a venting mechanism comprises providing a mechanical pop-off valve and a blow-out panel effective to prevent said pressure in said testing chamber from exceeding maximum safe pressure.

32. The method of claim 25 wherein said providing a venting mechanism comprises providing a mechanical pop-off valve and a blow-out panel effective to prevent said pressure in said testing chamber from exceeding maximum safe pressure.

33. The method of claim 1 wherein said maximum safe pressure is about 3400 psi.

34. The method of claim 2 wherein said maximum safe pressure is about 3400 psi.

35. The method of claim 3 wherein said maximum safe pressure is about 3400 psi.

36. The method of claim 4 wherein said maximum safe pressure is about 3400 psi.

37. The method of claim 29 wherein said maximum safe pressure is about 3400 psi.

38. The method of claim 30 wherein said maximum safe pressure is about 3400 psi.

39. The method of claim 31 wherein said maximum safe pressure is about 3400 psi.

40. The method of claim 32 wherein said maximum safe pressure is about 3400 psi.

41. A method of safely testing at least one lubrication property of DME under operating engine conditions, said method comprising:

providing a testing chamber comprising a workpiece;

sealing said testing chamber using one or more features of an actuator rod selected from the group consisting of a deviation from linearity through a longitudinal retaining bore and a clearance through the longitudinal retaining bore, the one or more features being effective to maintain the DME at a pressure of about 70 psi or more between the testing chamber and the outside of the testing chamber while permitting the actuator rod to move freely through the longitudinal retaining bore;

subjecting said workpiece to said operating engine conditions comprising a selected pressure and a selected temperature;

imparting to said workpiece a contact force having a magnitude and for a number of cycles effective to simulate said operating engine conditions; and,

providing a venting mechanism effective to prevent pressure in said testing chamber from exceeding maximum safe pressure.

42. The method of claim 41 wherein said method meets the requirements of ASTM testing specification D 6079.

43. The method of claim 41 wherein said pressure gradient is at least about 100 psi.

44. The method of claim 41 wherein said pressure gradient is at least about 150 psi.

45. The method of claim 41 wherein said pressure gradient is at least about 160 psi.

46. The method of claim 42 wherein said pressure gradient is at least about 100 psi.

47. The method of claim 42 wherein said pressure gradient is at least about 150 psi.

48. The method of claim 42 wherein said pressure gradient is at least about 160 psi.

49. The method of claim 41 wherein said pressurizing comprises feeding inert gas under pressure to said testing chamber.

50. The method of claim 49 wherein said inert gas is selected from the group consisting of nitrogen, helium, argon, and combinations therof.

51. The method of claim 49 wherein said gas is nitrogen.

52. The method of claim 41 wherein said selected temperature is from about 20°C to about 500 °C.

53. The method of claim 42 wherein said selected temperature is from about 20°C to about 500 °C.

54. The method of claim 41 wherein said deviation from linearity is about 100 microns or less.

55. The method of claim 42 wherein said deviation from linearity is about 100 microns or less.

56. The method of claim 41 wherein the sealing of said testing chamber is accomplished by providing a clearance through the longitudinal retaining bore of about 0.0005 inches.

57. The method of claim 42 wherein the sealing of said testing chamber is accomplished by providing a clearance through the longitudinal retaining bore of about 0.0005 inches.

58. The method of claim 41 wherein said providing a venting mechanism comprises providing a mechanical pop-off valve and a blow-out panel effective to prevent said pressure in said testing chamber from exceeding maximum safe pressure.

59. The method of claim 42 wherein said providing a venting mechanism comprises providing a mechanical pop-off valve and a blow-out panel effective to prevent said pressure in said testing chamber from exceeding maximum safe pressure.

60. The method of claim 41 wherein said maximum safe pressure is about 3400 psi.

61. The method of claim 42 wherein said maximum safe pressure is about 3400 psi.

62. The method of claim 55 wherein said maximum safe pressure is about 3400 psi.

63. The method of claim 56 wherein said maximum safe pressure is about 3400 psi.

64. A method of safely testing at least one lubrication property of DME under operating engine conditions, said method comprising:

providing a testing chamber comprising a workpiece;

sealing said testing chamber using one or more features of an actuator rod selected from the group consisting of a deviation from linearity through a longitudinal retaining bore and a clearance through the longitudinal retaining bore, the one or more features being effective to maintain the DME at a pressure gradient of about 100 psi or more between the testing chamber and the outside of the testing chamber while permitting the actuator rod to move freely through the longitudinal retaining bore;

subjecting said workpiece to said operating engine conditions comprising a pressure of at least about 70 psi and a selected temperature;

imparting to said workpiece a contact force having a magnitude and for a number of cycles effective to simulate said operating engine conditions;

providing a venting mechanism effective to prevent pressure in said testing chamber from exceeding maximum safe pressure.

65. The method of claim 64 wherein said method meets the requirements of ASTM testing specification D 6079.

66. The method of claim 64 wherein said pressurizing comprises feeding inert gas under pressure to said testing chamber.

67. The method of claim 66 wherein said inert gas is selected from the group consisting of nitrogen, helium, argon, and combinations therof.

68. The method of claim 66 wherein said gas is nitrogen.

69. The method of claim 65 wherein said pressurizing comprises feeding inert gas under pressure to said testing chamber.

70. The method of claim 69 wherein said inert gas is selected from the group consisting of nitrogen, helium, argon, and combinations therof.

71. The method of claim 69 wherein said gas is nitrogen.

72. The method of claim 69 wherein said selected temperature is from about 20°C to about 500 °C.

73. The method of claim 69 wherein said selected temperature is from about 20°C to about 500 °C.

74. The method of claim 71 wherein said selected temperature is from about 20°C to about 500 °C.

75. The method of claim 64 wherein said deviation from linearity is about 100 microns or less.

76. The method of claim 72 wherein said deviation from linearity is about 100 microns or less.

77. The method of claim 74 wherein said deviation from linearity is about 100 microns or less.

78. The method of claim 75 wherein the sealing of said testing chamber is accomplished by providing a clearance through the longitudinal retaining bore of about 0.0005 inches.

79. The method of claim 76 wherein the sealing of said testing chamber is accomplished by providing a clearance through the longitudinal retaining bore of about 0.0005 inches.

80. The method of claim 77 wherein the sealing of said testing chamber is accomplished by providing a clearance through the longitudinal retaining bore of about 0.0005 inches.

81. The method of claim 78 wherein said providing a venting mechanism comprises providing a mechanical pop-off valve and a blow-out panel effective to prevent said pressure in said testing chamber from exceeding maximum safe pressure.

82. The method of claim 79 wherein said providing a venting mechanism comprises providing a mechanical pop-off valve and a blow-out panel effective to prevent said pressure in said testing chamber from exceeding maximum safe pressure.

83. The method of claim 80 wherein said providing a venting mechanism comprises providing a mechanical pop-off valve and a blow-out panel effective to prevent said pressure in said testing chamber from exceeding maximum safe pressure.

84. The method of claim 81 wherein said maximum safe pressure is about 3400 psi.

85. The method of claim 82 wherein said maximum safe pressure is about 3400 psi.

86. The method of claim 83 wherein said maximum safe pressure is about 3400 psi.